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2016 Summer Undergraduate Research Symposium

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SUMMER
UNDER
GRADUATE
RESEARCH
SYMPOSIUM
JULY 29, 2016
SEERLEY HALL
COLLEGE OF HUMANITIES,
ARTS AND SCIENCES
University of Northern Iowa

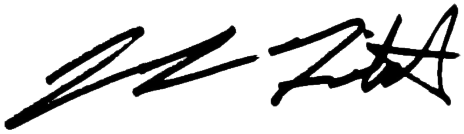
A message from Dr. John Fritch,

DEAN, COLLEGE OF HUMANITIES, ARTS AND SCIENCES

Welcome to the Summer Undergraduate Research Symposium!

Today recognizes and celebrates the work of UNI undergraduate researchers this summer. We, as a college, are exceptionally proud of the work of these students. While many students are working at odd jobs to earn money over the summer and some are enjoying their time off from classes, these students are putting forth hours of work to develop themselves through hands-on research in a laboratory setting. Their summers have been filled exploring questions in which they are interested and working closely with UNI faculty. They have learned a variety of lessons: how to formulate questions, how to develop answers to those questions, how to work with faculty and peers, and how to break (and repair) instrumentation. Today we celebrate the work of these students, and we thank those who made their work possible. Many of the students are supported by generous gifts from alums and friends of UNI; others are supported by the hard-earned grants of the faculty with whom they work. I am grateful to the donors and faculty for their support of these students.

Please enjoy the day.



SYMPOSIUM SCHEDULE

11:30am *Welcome*

Dr. John Fritch, Dean
College of Humanities, Arts and Sciences

11:45am - 1:30pm *Poster Session and Lunch*

PARTICIPANTS & POSTER LOCATIONS

(1) **ELIZABETH LASH,** AI WEN, AND KENNETH ELGERSMA (BIOLOGY)
The Comparison of Bee Hotel Occupancy and Bee Diversity and Abundance in Different Biofuel Treatments

(2) **LULUA RAWWAS** AND JULIE KANG (BIOLOGY)
The Genetic Relationship between Leaf Margin Regulation and Vascular Patterning in Arabidopsis thaliana

(3) **NICOLE BISHOP** AND KENNETH ELGERSMA (BIOLOGY)
Effects of Plant Diversity on Litter Decay Rates and Nitrogen Resorption in Switchgrass Floyd Fellowship

(4) **CORINNE MYERS,** MARK MYERS, GRIFFIN GEICK, AND DANIEL PIMENTEL FERNANDES DE SOUZA (BIOLOGY)
Common Milkweed Plant Characteristics in Perennial Prairie Plots of Varying Diversity

(5) **GRIFFIN GEICK,** MARK MYERS, CORINNE MYERS, AND DANIEL PIMENTEL FERNANDES DE SOUZA (BIOLOGY)
Common Milkweed Density in Perennial Prairie Plots of Varying Diversity

(6) **DANIEL PIMENTEL FERNANDES DE SOUZA,** MARK MYERS, GRIFFIN GEICK, AND CORINNE MYERS (BIOLOGY)
Bird Microhabitat Selection in an Experimental, Hetergeneous (soil, diversity) Prairie Restoration

(7) **GAVIN MCGIVNEY** AND NATHAN C. BIRD (BIOLOGY)
Testing the Immunity of the Weberian Apparatus to Developmental Modulators

(8) **JOSEPH CAMPBELL** AND NATHAN C. BIRD (BIOLOGY)
The Relationship Among Environment, Body Shape, and Weberian Apparatus Morphology in Danionin Fishes

(9) **HANNAH DIETZ** AND MARK SHERRARD (BIOLOGY)
Plant Nitrogen Use and Soil Legacy Effects in Prairie Biomass Feedstocks with Different Diversity

(10) **EMILY DALLUGE** AND MARK SHERRARD (BIOLOGY)
The Utility of Remote Sensing for Estimating Plant Nitrogen in Prairie Biomass Feedstocks

(11) **JONATHAN NEDERHOFF** AND JEFFREY ELBERT (CHEMISTRY & BIOCHEMISTRY)
Synthesis and Isolation of Novel Naphthalimide Derivatives

(12) **CHARLOTTE RADAL** AND JEFFREY ELBERT (CHEMISTRY & BIOCHEMISTRY)
Coupling Methods of Carboxylic Acid Derivatives with Drug Targets

(13) **DMYTRO KRAVCHUK** AND JEFFREY ELBERT (CHEMISTRY & BIOCHEMISTRY)
Synthetic Pathways of Photoactive Drug Delivery Complexes and its Derivatives

(14) **NICHOLAS BONDE** AND DAWN DEL CARLO (CHEMISTRY & BIOCHEMISTRY)
Students' Perceptions of How Science Writing Heuristic Pre-labs Prepare Them for Lab

(15) **NATHAN BETZ** AND DAWN DEL CARLO (CHEMISTRY & BIOCHEMISTRY)
Networks of Science Faculty with Education Specialties

(16) **NATHAN BETZ, NICHOLAS BONDE,** AND DAWN DEL CARLO (CHEMISTRY & BIOCHEMISTRY)
Outcomes of Iowa Department of Education Title II-MSP Funded Professional Development at UNI

(17) **NICHOLAS PAULEY,** MADELINE ROACH, JOSHUA SEBREE (CHEMISTRY AND BIOCHEMISTRY), SARAH HORST, CHAO HE (JOHNS HOPKINS UNIVERSITY)
Formation and Characterization of Cryo-Spheric Aerosols

(18) **MADELINE ROACH,** NICHOLAS PAULEY, AND JOSHUA SEBREE (CHEMISTRY & BIOCHEMISTRY)
GC/QQQ Limits of Detection for Biomolecules in Abiotic Aerosols

(19) **WYATT ANDERSEN,** ALEX SMITH, KAVITA DHANWADA (BIOLOGY), AND NALIN GOONESEKERE (CHEMISTRY & BIOCHEMISTRY)
Validation of Downregulated Genes in Pancreatic Cancer using quantitative Reverse Transcriptase-PCR

(20) **HALEY KERNS, MAI NGUYEN,** AND R. MARTIN CHIN (CHEMISTRY AND BIOCHEMISTRY)
Syntheses, Characterization and Reactivity of Dirutherium Catalysts.

(21) **KATHERINE PLOTZKE** AND SHOSHANNA COON (CHEMISTRY & BIOCHEMISTRY)
The Effect of pH on the Reversible Metachromasy of Crystal Violet on TiO_2

(22) **COVED OSWALD, BEAU BROWN,** SARAH DIESBURG, AND ADAM FELDHAUS (COMPUTER SCIENCE & MATH EDUCATION)
Motion Virtual Manipulatives: Emerging Technology for the Elementary Math Classroom Wall

(23) **KEITH DOORE** AND SIOBAHN MORGAN (EARTH AND ENVIRONMENTAL SCIENCES)
Using Fourier Coefficients to Examine the Metallicity of the Milky Way and Other Galaxies

(24) **ELIZA ROSS** AND CHAD HEINZEL
(EARTH & ENVIRONMENTAL SCIENCES)
Surficial Geology of the Maqoketa Quadrangle

(25) **RILEY MULLINS** AND XINHUA SHEN
(EARTH AND ENVIRONMENTAL SCIENCES)
Reducing Greenhouse Gas Emissions with Advanced Nano-engineered Materials

(26) **MERCI DAY,** ELIZABETH HUGHES, HEATHER GALLIVAN, AND MEGAN BALONG (MATHEMATICS)
Pre-Service Teachers' Identification of Discourse Moves in an Early Childhood Classroom

(27) **HEATHER BAVIDO,** TJ HITCHMAN, AND BILL WOOD
(MATHEMATICS)
3D Modelling and Printing for Mathematics

(28) **MEGHAN REYNOLDS,** ADAM W. TSEN, AND RUI HE (PHYSICS)
Laser Heating of Charge Density Waves in Ultrathin 1T-TaS_2

(29) **CAI HE,** C. H. LUI, AND RUI HE (PHYSICS)
Investigation of Niobium Diselenide ($NbSe_2$) by Raman Spectroscopy

(30) **CHUHAN WANG,** SUKRIT SUCHARITAKUL, XUAN GAO, AND RUI HE (PHYSICS)
Optical Studies of SnS

(31) **NEIL W. CAMPBELL, MATTHEW JUNGE,** PAUL M. SHAND, AND LAURA STRAUSS
(PHYSICS)
Magnetic Properties of Fe_xTaS_2

(32) **JACOB WEBER, RYAN HOLZAPFEL, KEITH DOORE,** TIMOTHY E. KIDD, AND ANDREW STOLLENWERK (PHYSICS)
Quantum Size Effects in Au Layers on MoS_2

(33) **BYRON FRITCH** AND TIMOTHY E. KIDD (PHYSICS)
TiO_2 Coated Nanocellulose Aerogel Catalysts

(34) **PAYTON BURKEN** AND TIMOTHY E. KIDD (PHYSICS)
Migration and Aggregation in Subsurface Nanostructures grown on Layered Materials via Electron Beam Radiation

(35) **KRISTINE NIELSON** AND TIMOTHY E. KIDD (PHYSICS)
Printing in 3D with Chocolate

(36) **COLTEN LASTINE, MICHAEL MARTIN,** AND ALI TABEI (PHYSICS)
Walking on Self-Similar Structures

(37) **RYAN HOLZAPFEL, JACOB WEBER, KEITH DOORE,** ROBERT PALANDECH, TIMOTHY E. KIDD, AND ANDREW STOLLENWERK (PHYSICS)
Electron Transport through Finite Layer MoS_2 on Au/Si(001)

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COMPUTER SCIENCE
EARTH AND ENVIRONMENTAL SCIENCES
MATHEMATICS
PHYSICS

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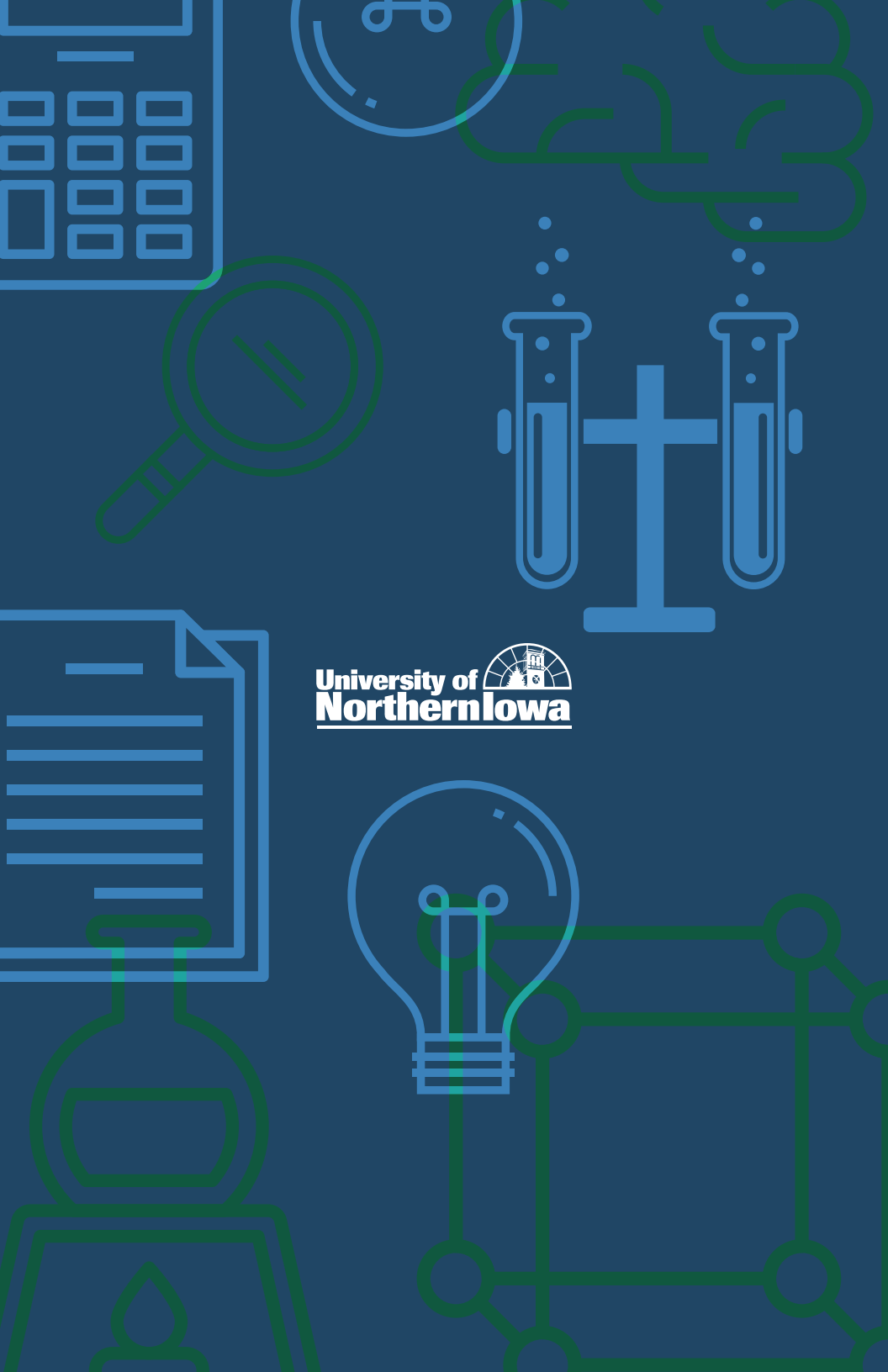
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